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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,906	01/14/2004	Chris Andre Du Plessis	10908/8 (MAJR)	3086
757	7590	12/09/2004	EXAMINER	
BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610			ANDREWS, MELVYN J	
			ART UNIT	PAPER NUMBER
			1742	
DATE MAILED: 12/09/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/756,906

Applicant(s)

DU PLESSIS, CHRIS ANDRE

Examiner

Melvyn J. Andrews

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11404.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. An example of an enzyme and protein to be recovered is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976)..

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 to 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because there is no antecedent basis for the expression "the resulting liquid " on line 4; the "continuous centrifugal process" and the "batch centrifugal process" do not clearly define the steps of the process with respect to material treated and product recovered; on line 4 and on line 8 the expression "the resulting liquid" does not clearly include microbial cells and the expression "using one" on line 5 is incomplete.

Claim 3 is indefinite because the "phases" are not identified.

Claim 5 recites the limitation "metal " in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 is indefinite since it is unclear how the "backup inoculum" is used?

Claim 10 is indefinite because it fails to define the relationship of "the new bioleaching reactor to the process of claim 1.

Claim 11 is indefinite because it fails to identify a "currently used bioleaching reactor".

Claim 12 is indefinite because the enzyme and protein to be recovered are not identified.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the publication by Harrison et al . Harrison et al disclose the use of hydrocyclones for differential separations within mineral slurries subjected to bioleaching which holds the potential in the recycling of bacteria to the

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continuous to retain higher biomass concentration and improve process robustness (see Abstract) .

With respect to Claim 2 Harrison et al effects differential separation of leached slurry of sulphidic ore which results in bacteria being separated from metals contained in the minerals.

With respect to Claim 4 a plurality of reactors would be an obvious method to optimize the recovery rate.

With respect to Claims 6 to 8 Harrison et al does not disclose these features but these methods are conventional method of storing bacteria .

With respect to Claims 9 to 11 Harrison et al discloses recycling of bacteria which would obviously include the claimed methods.

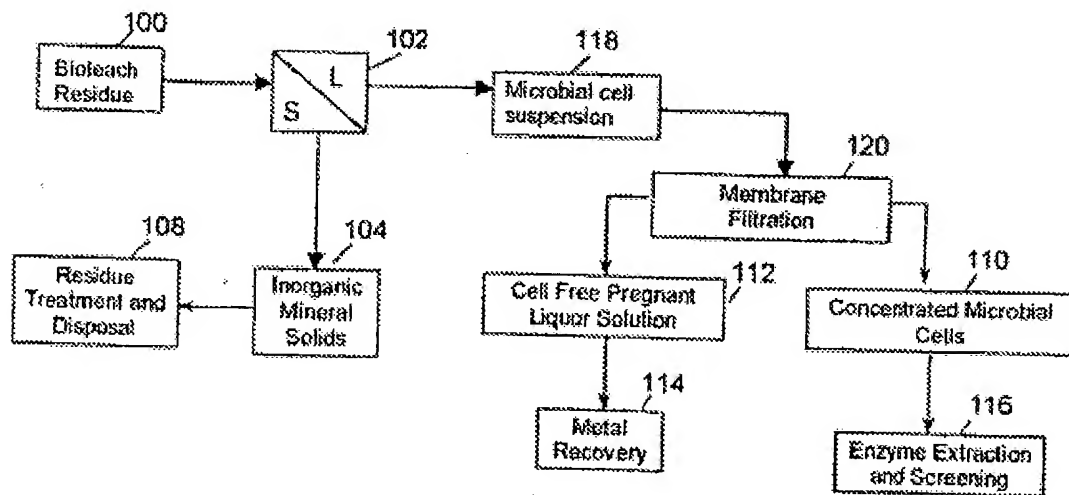
With respect to Claim 12 discloses recycling bacteria which comprise enzymes and proteins.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over publication WO 02/42504. The '504 publication discloses a method of producing bioproducts by a method of separating and recovering bioproducts from a slurry (see Claim 1 page 19) and Figure 2 shows in more detail a specific method for the separation of biomass (microbial cells) from minerals, solid particles and liquid solution and concentration of the microbial cell biomass from the rest of the bioleach liquor . In a second phase the microbial cell-containing supernat reports to a membrane filtration process (120) which results in a high microbial cell concentration solution 110 which facilitates the

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down stream use of microbial cell biomass for enzyme extraction and screening(116) (seepage 15, line 21 to page16, line11) , optionally followed by recycling to a bioleaching reactor and as shown in Fig 2

2/2



but does not disclose backflusing or washing the screening (116) but these techniques are conventional.

With respect to Claim 2 WO 02/42504 discloses differential separation of leached slurry of sulphidic ore which results in bacteria being separated from metals contained in the minerals.

With respect to Claim 4 WO 02/42504 a plurality of reactors would be an obvious method to optimize the recovery rate.

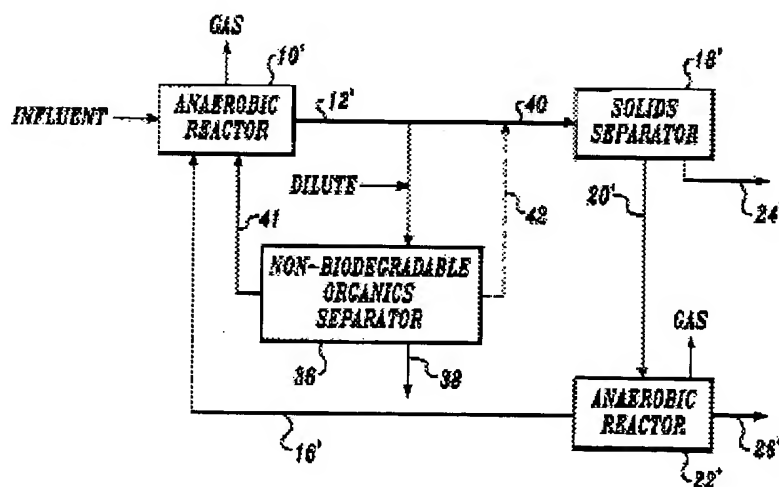
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With respect to Claims 6 to 8 WO 02/42504 does not disclose these features but these methods are conventional method of storing bacteria .

With respect to Claims 9 to 11 WO 02/42504 discloses recycling of bacteria which would obviously include the claimed methods.

With respect to Claim 12 WO 02/42504 discloses enzymes and proteins.

Claims 1 –12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke (US 6,309,547). Burke disclose a method of improving the efficiency of an anaerobic treatment process wherein anaerobic bacteria are contacted with dissolved inorganic material and undissolved inorganic material followed by separation of a portion of the anaerobic bacteria and by delivering the separated anaerobic bacteria to a second reactor (col.9, Claim 8, as shown Fig 4) using any separation device for example screens, filters, cyclones and hydrocyclones (col.9, Claims 10 and 11)

*Fig. 4*

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Burke does not explicitly disclose back flushing or washing a membrane but these techniques are conventional.

With respect to Claim 2 Burke discloses differential separation of leached slurry of sulphidic ore which results in bacteria being separated from metals contained in the minerals.

With respect to Claim 4 Burke discloses a plurality of reactors which would be an obvious method to optimize the recovery rate.

With respect to Claims 6 to 8 Burke does not disclose these features but these methods are conventional method of storing bacteria .

With respect to Claims 9 to 11 Burke discloses recycling of bacteria which would obviously include the claimed methods.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvyn J. Andrews whose telephone number is (571)272-1239. The examiner can normally be reached on 8:00A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on (571)272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJA
December 7, 2004



MELVYN ANDREWS
PRIMARY EXAMINER